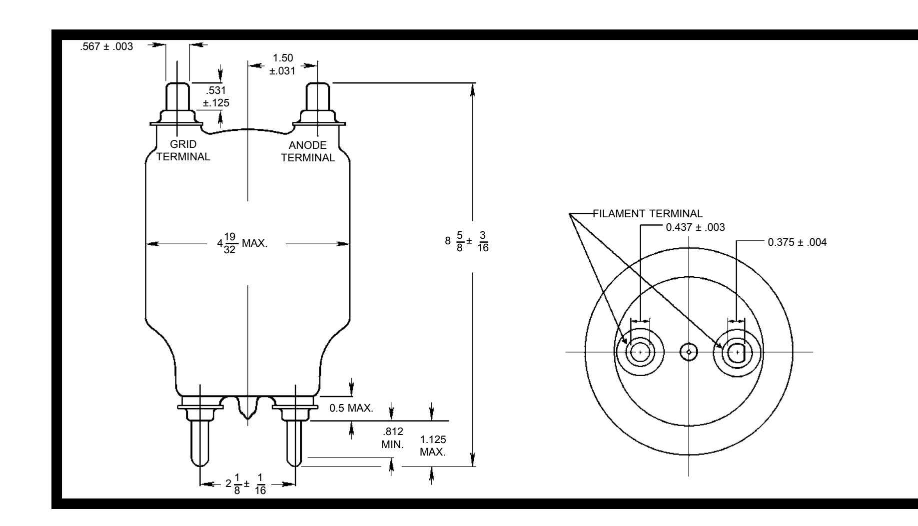


PL833A

Power Triode



The PL833A is a tri-electrode tube designed for use as a modulator, amplifier, and oscillator. The exclusive Penta Laboratories construction enables the PL833A to dissipate a full 550 watts, exceeding industry standards by some 20 percent. At maximum ratings, the tube is cooled by forced air flow over the seals and envelop. The PL833A utilizes a thoriated tungsten filament.

ELECTRICAL CHARACTERISTICS

Filament -- Thoriated Tungsten	
Voltage	10 volts
Current	10 amperes
Amplification Factor (E_c=-20 v, I_b=200 ma)	35
Interelectrode Capacitances	
Grid-Plate	6.3 μμ*f*
Grid-Filament	12.3 μμ*f*
Plate-Filament	8.5 μμ*f*

MECHANICAL CHARACTERISTICS

Filiment Terminals	J1-9 and J1-10
Grid and Anode Terminals	J1-7
Mounting Position	Vertical
Maximum Envelop Temperature	145º C
Maximum Overall Dimensions	
Length	8.81250 inches
Diameter	4.59375 inches
Net Weight (approximate)	1.025 pounds
Required Air Flow to Envelop **MAXIMUM**	40 CFM

Revised 3 Dec 2001



P E N T A L A B O R A T O R I E S, I N C.
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ELECTRON TUBES FOR INDUSTRY



RATINGS AND TYPICAL OPERATING CONDITIONS

AF Power Amplifier and Modulator--Class B

Maximum Ratings	Natural Cooling CCS	Natural Cooling ICAS	Forced-Air Cooling CCS	Forced-Air Cooling ICAS	
DC Plate Voltage	3000	3300	4000	4000	Volts Max.
Maximum Signal DC Plate Current	500	500	500	500	Milliamperes Max.
Maximum Signal Plate Input	1125	1300	1600	1800	Watts Max.
Plate Dissipation	300	350	400	450	Watts Max.

Typical Operation (Values are for two tubes)	Natural Cooling CCS	Natural Cooling ICAS	Forced-Air Cooling CCS	Forced-Air Cooling ICAS	
DC Plate Voltage	3000	3300	4000	4000	Volts
DC Grid Voltage	-70	-80	-100	-100	Volts
Peak AF Grid to Grid Voltage	400	440	480	510	Volts
Zero Signal DC Plate Current	100	100	100	100	Milliamperes
Maximum Signal DC Plate Current	750	780	800	900	Milliamperes
Effective Plate to Plate Load Resistance	9500	10500	12000	11000	Ω
Maximum Signal Driving Power (approximate)	20	30	29	38	Watts
Maximum Signal Power Output (approximate)	1650	1900	2400	2700	Watts

RF Power Amplifier--Class B

Maximum Ratings	Natural Cooling CCS	Natural Cooling ICAS	Forced-Air Cooling CCS	Forced-Air Cooling ICAS	
DC Plate Voltage	3000	3300	4000	4000	Volts Max.
DC Plate Current	300	300	300	300	Milliamperes Max.
Plate Input	450	525	600	675	Watts Max.
Plate Dissipation	300	350	400	450	Watts Max.

Typical Operation (Carrier conditions per tube with a maximum modulation factor of 1.0)	Natural Cooling CCS	Natural Cooling ICAS	Forced-Air Cooling CCS	Forced-Air Cooling ICAS	
DC Plate Voltage	3000	3300	4000	4000	Volts
DC Grid Voltage	-70	-100	-120	-120	Volts
Peak RF Grid Voltage	90	110	120	130	Volts
DC Plate Current	150	150	150	150	Milliamperes
DC Grid Current (approximate)	2	2	2	3	Milliamperes
Driving Power (approximate)	10	11	14	21	Watts
Power Output (approximate)	150	200	225	250	Watts

Plate Modulated RF Power Amplifier--Class C Telephony

Maximum Ratings	Natural Cooling CCS	Natural Cooling ICAS	Forced-Air Cooling CCS	Forced-Air Cooling ICAS	
DC Plate Voltage	2500	3000	3000	4000	Volts Max.
DC Grid Voltage	-500	-500	-500	-500	Volts Max.
DC Plate Current	400	400	450	450	Milliamperes Max.
DC Grid Current	100	100	100	100	Milliamperes Max.
Plate Input	835	1000	1250	1800	Watts Max.
Plate Dissipation	200	250	270	350	Watts Max.



Plate Modulated RF Power Amplifier--Class C Telephony (continued)

Typical Operation (Carrier conditions per tube with a maximum modulation factor of 1.0)

	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
DC Plate Voltage	2500	3000	3000	4000	Volts
DC Grid Voltage	-300	-240	-300	-325	Volts
Peak RF Grid Voltage	460	410	490	520	Volts
DC Plate Current	335	335	415	450	Milliamperes
DC Grid Current (approximate)	75	70	85	90	Milliamperes
Driving Power (approximate)	30	26	37	42	Watts
Power Output (approximate)	635	800	1000	1500	Watts

RF Power Amplifier and Oscillator Class C Telephony

Maximum Ratings

	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
DC Plate Voltage	3000	3300	4000	4000	Volts Max.
DC Grid Voltage	-500	-500	-500	-500	Volts Max.
DC Plate Current	500	500	500	500	Milliamperes Max.
DC Grid Current	100	100	100	100	Milliamperes Max.
Plate Input	1250	1500	1800	2000	Watts Max.
Plate Dissipation	300	350	400	450	Watts Max.

Typical Operation (Key-down conditions per tube without amplitude modulation)

	Natural Cooling		Forced-Air Cooling		
	CCS	ICAS	CCS	ICAS	
DC Plate Voltage	3000	3000	4000	4000	Volts
DC Grid Voltage	-200	-160	-200	-225	Volts
Peak RF Grid Voltage	360	310	375	415	Volts
DC Plate Current	415	335	450	500	Milliamperes
DC Grid Current (approximate)	55	70	75	95	Milliamperes
Driving Power (approximate)	20	20	26	35	Watts
Power Output (approximate)	1000	800	1440	1600	Watts

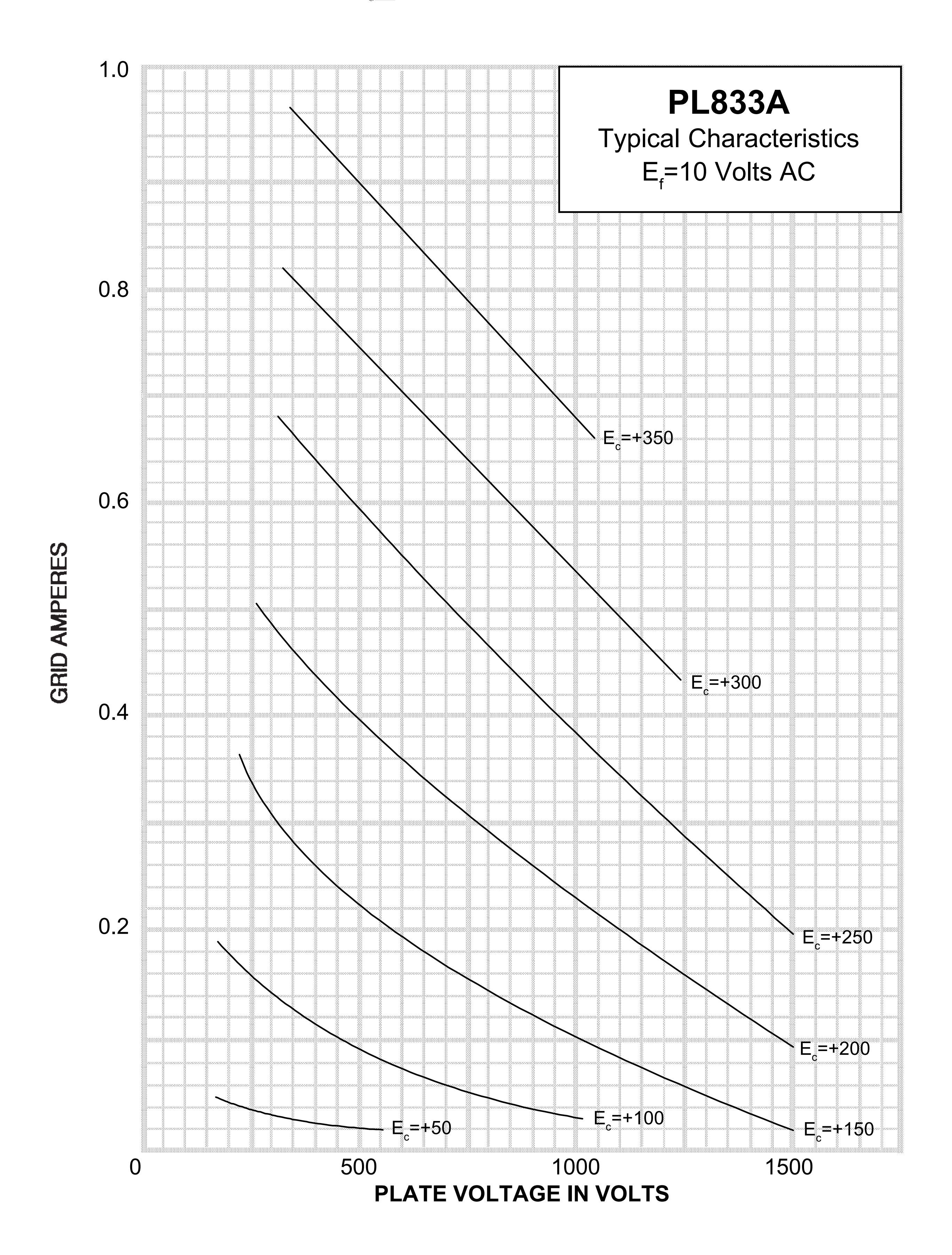
APPLICATION NOTES

Maximum ratings apply at frequencies up to 20 megacycles. The tube may be operated at higher frequencies provided the maximum values of the plate voltage and plate input are reduced according to the table below. Special attention should be given to insuring that adequate ventilation is provided at these frequencies.

Frequency . . . .

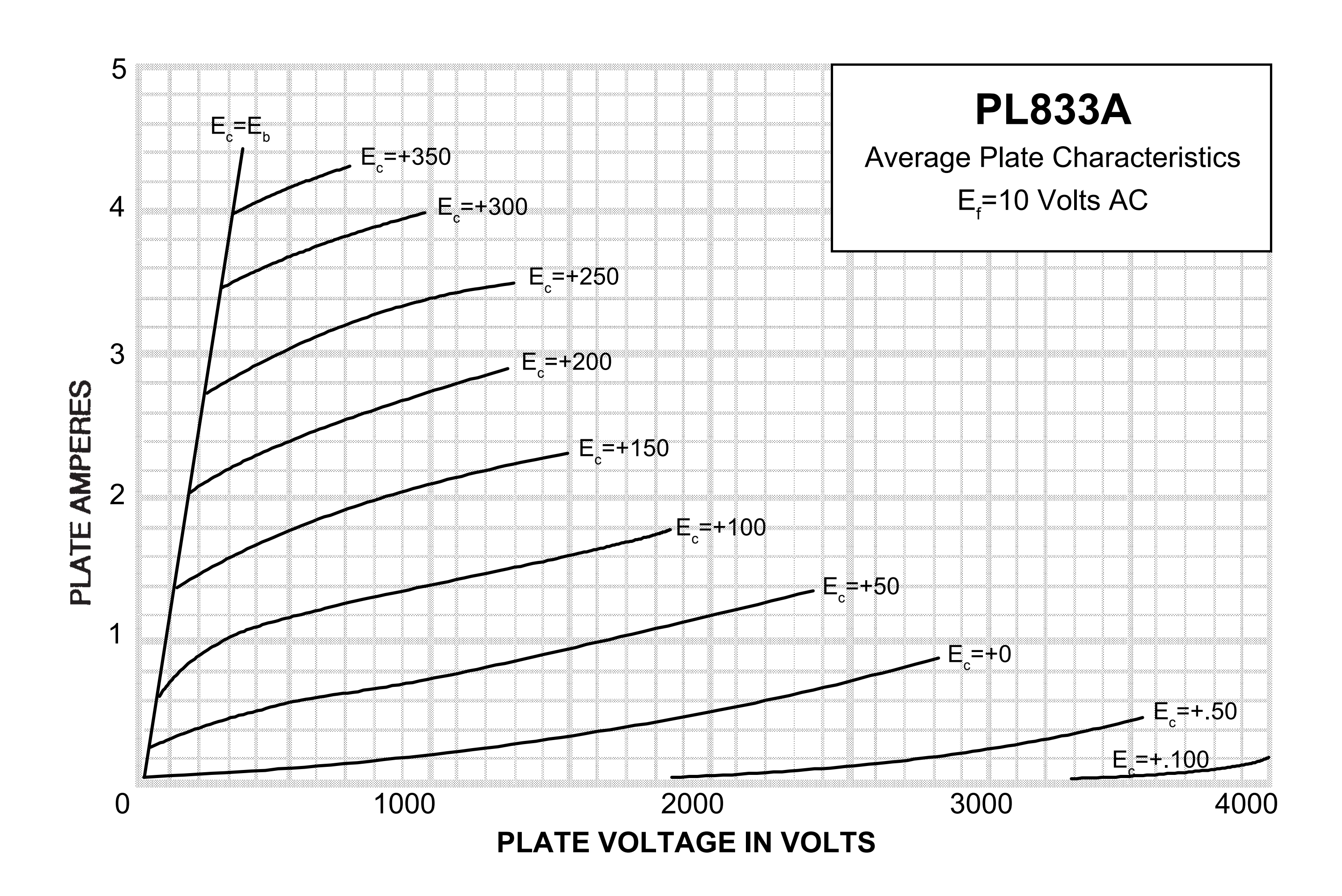
	Natural Cooling			Forced-Air Cooling			
Percent Of Maximum Rated Plate Voltage and Plate Input	30	50	75	20	50	75	Megacycles
Class B							
Class C Plate Modulated	100	98	94	100	97	93	Percent
Class C Unmodulated	100	90	72	100	83	65	Percent
	100	90	72	100	83	65	Percent

PL833A



PL833A
Typical Characteristics
E_f=10 Volts AC
1.0
0.8
0.6
0.4
0.2
0
500
1000
1500
GRID AMPERES
PLATE VOLTAGE IN VOLTS
E_c=+350
E_c=+300
E_c=+250
E_c=+200
E_c=+150
E_c=+100
E_c=+50

PL833A



PL833A
Average Plate Characteristics
Ef=10 Volts AC
PLATE AMPERES
PLATE VOLTAGE IN VOLTS
Ec=Eb
Ec=+350
Ec=+300
Ec=+250
Ec=+200
Ec=+150
Ec=+100
Ec=+50
Ec=+0
Ec=+.50
Ec=+.100
0
1
2
3
4
5
1000
2000
3000
4000